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10/811,361	03/25/2004	Robert William Eugeno Mack	5087-144	2092

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EXAMINER	
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ART UNIT	PAPER NUMBER
2611	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/811,361	MACK ET AL.	
	Examiner	Art Unit	
	Siu M. Lee	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 14-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12, 14-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-12 and 14-19 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 11-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(1) Regarding claim 11:

Claim 11 recites "comparing the received code further comprising comparing the received code against at least one reference value". Claim 11 depends on claim 10 and claim 10 depends on claim 8. Claim 8 recites "comparing the first pseudo-noise code to the second pseudo-noise code", it is unclear in claim 11 that whether the first pseudo-noise code or the second code is compare against at least one reference value or comparing both codes to the at least one reference value.

(2) Regarding claim 12:

Claim 12 recites "using a part of the received code as an index into a lookup table". It is unclear either part of the first code or part of the second code is being used as an index into a lookup table.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, 4, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mayrargue (US 2004/0234005 A1).

(1) Regarding claim 1:

Mayrargue discloses a transmission method comprising transmitting a first pseudo-noise code (for k/2 transmission, one or more given spread spectrum code is used, paragraph 0141, lines 3) and transmitting a second pseudo-noise code (for the other k/2 transmissions the conjugates and temporal inverse of these codes are used, paragraph 0141, lines 4-5), wherein the second pseudo-noise code is a time-reversed version (a code obtained from the code of the first symbol by inverting the direction of time, paragraph 0136, lines 3-4, temporal inverse of these codes are used, paragraph 0141, lines 4-5) of the first pseudo-noise code and a relationship between the first and second codes in each transmission allows transmission of two bits of data for each one transmission

(Mayrargue discloses that a pair of symbol is transmitter in using the first code and the same pair of symbol is transmitted using the second code (temporal inverse), therefore, two symbol is transmitted by the 2 codes, it would have been obvious to recognize that 1 bit is being represent by 1 symbol, so when transmitted two symbols, 2 bits will be transmitted, paragraph 0031).

(2) Regarding claim 2:

Mayrargue further discloses a method of transmitting a second pseudo-noise code (spread spectrum code) that is bit-wise inverted from the first pseudo-noise code (the symbols to be transmitted are considered pairwise, they are transmitted while inverting the symbols of the pair on one antenna by inverted the signs of the chosen symbols, and transmitting the conjugate of chosen symbols, so as to obtain a 2 x 2 transmission matrix which is orthogonal, paragraph 0033).

(3) Regarding claim 4:

Mayrargue further discloses that the method comprising using the first and second pseudo-noise codes to establish a communication link with a receiver of the first and second code (the signal being transmitted on a single antenna, and received on two antennas, the propagation channels linking the single transmitter to each receiver being the same one respectively as those linking each of the transmission antennas to the single receiver of STTD, paragraph 0032, lines 6-11).

(4) Regarding claim 5:

Mayrargue further discloses that transmitting a pseudo-noise code wherein selection of the code depends upon a type of transmission device (the selection of the pair of code depends on the transmitter that has n antennas, wherein n greater than or equal to 2, paragraph 0082, lines 1-2).

6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mayrargue (US 2004/0234005 A1) in view of Sugita et al. (US 5,862,172).

Mayrargue discloses all the subject matter as discussed in claim 1 above except transmitting a first pseudo-noise code as a bit wise inverted version of an original code.

However, Sugita et al. discloses transmitted of a first pseudo-noise that can be inverted (column 19, lines 17-20).

It is desirable to transmit a first pseudo-noise code as a bit wise inverted version of an original code because it can improve the detection accuracy (column 2, lines10-12). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Sugita et al. in the method of Mayrargue to improve the reliability of the method.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mayrargue (US 2004/0234005 A1) in view of Partyka (US 6,925,105 B1).

Mayrargue discloses all the subject matter as discussed in claim 1 except the transmitting a pseudo-noise code wherein selection of the code depending upon a transmitting device.

However, Partyka discloses a transmission method that includes a portions of the transmission ID code of the transmitter for the receiver to identify the transmitter (column 4, lines 62-67).

It is desirable to for the selection of the code depends on a transmitting device because it aid the receiver in obtaining synchronization with a transmitter whose ID is known (column 5, lines 19-20). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Partyka in the method of Mayrargue to improve the performance by shortening the synchronization time.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mayrargue (US 2004/0234005 A1) in view of Varney et al. (US 2004/0095954 A1).

Mayrargue discloses all the subject matter as discussed in claim 1 except wherein selection of the code depends upon an event.

However, Varney et al. discloses using a code to identify an emergency situation the emergency service personnel use their mobile subscriber station 101 to transmit an SMS message to the Short Message Service Center 104, with data that identifies the emergency service personnel (e.g. user name) and a passcode, which typically comprises the above-noted code word that identifies the existence of an emergency situation to initiate the retrieval of the priority call access code, paragraph 0022, lines 1-10).

It is desirable to select a code depends upon an event because priority call access code are guaranteed wireless communication service (paragraph 0005, lines 5-7). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Varney et al. in the method of Mayrargue to provide a more reliability method for emergency situation.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugita et al. (US 5,862,172) in view of Moses et al. (US 6,035,177).

Sugita et al. discloses a method of receiving communication codes, comprising;

receiving a transmission including first and a second pseudo-noise codes form into a pair (the PN detecting parts 28 and 29 in figure 3B detect the first and second PN codes S20 and S21 from the initial synchronizing signal portion in the received signal S27, column 5, lines 51-53);

comparing the first pseudo-noise code to the second pseudo-noise code (the PN deciding unit 45 decide by using the correlation value obtained from the detected signal S28 and S29 and the correlation value is outputted as the detected signal S42, column 7, lines 39-42); and

detecting a match between the first and second pseudo-noise codes based upon a match count peak (detector 47A to 47G in figure 8 output the correlation values as the detected signal S45A to S45G, the maximum likelihood output circuit 48 compares the intensity of the correlation values obtained from

the detected signal S45A to S45G and regards the value having the strongest correlation as a reliable timing, column 8, lines 20-31).

Sugita et al. fails to disclose sending an enable signal to a memory to cause the memory to store at least one of the first and second codes, the enable signal based upon a match detection result.

However, Moses et al. discloses sending an enable signal to a memory to cause the memory to store at least one of the first and second codes, the enable signal based upon a match detection result (once acquisition of the ancillary code is confirmed by the NN 332, this fact is indicated to the lock detect circuit 320 as confirmation that the lock is valid, the ancillary codes output from the NN 332 is held in a data storage unit DSU 334, column 11, lines 21-35).

It is desirable to enable signal to a memory to cause the memory to store at least one of the first and second codes, the enable signal based upon a match detection result because it save time for later retrieval of the code. Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Moses et al. in the method of Sugita et al. to reduce retrieval time of the method.

10. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugita et al. (US 5,862,172) in view of Moses et al. (US 6,035,177) as applied to claim 8 above, and further in view of Strong (US 6,442,191 B1).

Sugita et al. and Moses et al. disclose all the subject matter as discuss in claim 8 except the method comprising filtering outputs results from the detecting to identify sharp peaks.

However, Strong discloses filtering outputs results from the detecting to identify sharp peaks (the widened post-detector filter (filter 88 in figure 3) prevents the narrow peaks present at the output from the log detector from being attenuated before reaching the peak detector, column 5, lines 31-34).

It is desirable to filtering outputs results from the detecting to identify sharp peaks because it prevent peaks not being detected due to attenuation. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Strong in the method of Sugita et al. and Moses et al. to improve the performance of the method.

11. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugita et al. (US 5,862,172) in view of Godo (US 4,205,302) and Moses et al. (US 6,035,177).

(1) Regarding claim 14:

Sugita et al. discloses a receiver that receives a pair of pseudo-noise code (PN code transmitted by the PN gen 23 and PN gen 24 in the transmitter in figure 3A, the receiver in figure 3B receives first and second PN codes S20 and S21 fro the initial synchronization signal portion in the receiving signal S27, column 5, lines 51-53).

Sugita et al. fails to disclose (a) a first register to store a first pseudo-noise code; a second shift register to store a second pseudo-noise code in the time reversed order; a comparison circuit to compare contents of the first register to contents of the second register and output a match count result and (b) a memory electrically coupled to the comparison circuit to receive an enable signal from the comparison circuit, the enable signal being based upon a match count result.

Regarding (a), Godo discloses a first register to store a first code (circulating a known word in a first shift register clocked in a first direction, column 5, lines 16-17); a second shift register to store a second code in the time reversed order (clocking said data stream through a second shift register in a direction opposite from said first direction, column 5, lines 18-20); a comparison circuit (comparator G) to compare contents of the first register to contents of the second register and output a match count result (the output of the counter is connected to a counter which counts the number of positive comparison between bits (matching bits, column 2, lies 25-28).

It is desirable to have a first register to store a first pseudo-noise code; a second shift register to store a second pseudo-noise code in the time reversed order; a comparison circuit to compare contents of the first register to contents of the second register and output a match count result because it is capable of operating with correlation error approaching zero regardless of word length (column 1, lines 47-18). Therefore, it would have been obvious to one of

ordinary skill in the art at the time of invention to employ the teaching of Godo in the receiver of Sugita et al. to improve the performance of the receiver.

Regarding (b), Strong discloses a memory electrically coupled to the comparison circuit to receive an enable signal from the comparison circuit, the enable signal being based upon a match count result (the PN code is merged modulo-2 with the signal output from the preprocessing circuit 305 by an XOR gate 330 to recover the ancillary code, it is inherent that the process of finding the pn code after the XOR gate would involve a match count process, once acquisition of the ancillary code is confirmed by the NN 332, this fact is indicated to the lock detect circuit 320 as confirmation that the lock is valid, the ancillary codes output from the NN 332 is held in a data storage unit DSU 334, column 11, lines 21-35).

It is desirable to have a memory electrically coupled to the comparison circuit to receive an enable signal from the comparison circuit, the enable signal being based upon a match count result because it save time for later retrieval of the code. Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Moses et al. in the method of Sugita et al. and Godo to reduce retrieval time of the method.

(2) Regarding claim 15:

Godo further discloses that the first register comprising a shift register (column 5, lines 16-17).

(3) Regarding claim 16:

Godo further discloses the second register comprising a shift register to shift data in a direction opposite a direction of the first register (the first shift register shift in a first direction and the second shift register shift in direction opposite from said first direction, column 5, lines 16-20)

12. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugita et al. (US 5,862,172) in view of Moses et al. (US 6,035,177) as applied to claim 8 above, and further in view of Fitzgibbon et al. (US 2003/0023881 A1).

Sugita et al., Kurihara et al., and Moses et al. disclose all the subject matter as discussed in claim 8 except storing the code for later analysis as a received code.

However, Fitzgibbon et al. discloses a method that storing the code for later analysis as a received code (When a code is correctly received in the test mode, the type of expected code becomes the code type to be received and the received fixed code or fixed code portion of a received code is stored in nonvolatile memory for use in matching later received codes, paragraph 0074, lines 18-23).

It is desirable to store the code for later analysis as a received code because it save time in retrieval of the code. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Fitzgibbon et al. in the method of Sugita et al., Kurihara et al., and Moses et al. to improve the performance of the method.

13. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugita et al. (US 5,862,172) in view of Godo (US 4,205,302) and Moses et al. (US 6,035,177) as applied to claim 14 above, and further in view of Poon et al. (US 2003/0128747 A1).

Sugita et al. and Kurihara et al. discloses all the subject matter as discussed in claim 14 except the device comprising a filter to filter the result and identify sharp peaks.

However, Poon et al. discloses a peak filter module 278 suppresses false peaks from the input of peak analyzer module 276 before identify sharp peaks (paragraph 0099, lines 4-6).

It is desirable to use a filter to filter the result and identify sharp peaks because it can reject false peaks (paragraph 0095, lines 1-3). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Poon et al. in the device of Sugita et al., Moses et al. and Godo to improve the reliability of the device.

14. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugita et al. (US 5,862,172) in view of Godo (US 4,205,302) and Moses et al. (US 6,035,177) as applied to claim 14 above, and further in view of Roth (US 4,032,885).

Sugita et al. and Kurihara et al. discloses all the subject matter as discussed in claim 14 except the comparison circuit comprising an exclusive OR gate array.

However, Roth discloses that a comparator make up of a network of exclusive OR gates (column 1, lines 62-67, exclusive OR gate 76 in figure 5, column 6, lines 40-42).

It is desirable for the comparison circuit comprising an exclusive OR gate array because it provides an improved error tolerant bit pattern detector which is simple and economical (column 2, lines 30-32). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to employ the teaching of Roth in the device of Sugita et al., Moses et al. and Godo to simplify and reduce production cost of the device.

15. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugita et al. (US 5,862,172) in view of Godo (US 4,205,302) and Moses et al. (US 6,035,177) as applied to claim 14 above, and further in view of Harms et al. (US 6,493,376 B1).

Sugita et al. and Kurihara et al. discloses all the subject matter as discussed in claim 14 except the device comprising a memory to store one of the first pseudo-noise code or the second pseudo-noise code as a received code.

However, Harms et al. discloses a memory (memory element 144 in figure 12) that can store one of the first pseudo-noise code or the second pseudo-noise code as a received code (column 23, lines 51-55).

It is desirable to have a memory to store one of the first pseudo-noise code or the second pseudo-noise code as a received code because it saves time for recovering the code when it is need. Therefore, it would have been obvious

to one of ordinary skill in the art at the time of invention to combine the memory element of Harms et al. with the device of Sugita et al., Godo and Moses et al. to provide a more efficient device.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shi et al. (US 6,876,692 B2) discloses a system for code division multi-access communication. Callaway, Jr. et al. (US 6,519,275 B2) discloses a communication system employing differential orthogonal modulation. Shou et al. (US 6,212,219 B1) discloses a spread spectrum communication system. Raphaeli (US 6,064,695) discloses a spread spectrum communication system utilizing differential code shift keying. Zhou et al. (US 5,930,290) discloses a spread spectrum communication for high-speed communication. Matsumoto (US 3,978,406) discloses a code error detecting system in digital code transmission. Horne (US 6,798,825 B1) discloses a method for using circular spreading code to achieve high bit densities in a direct-sequence spread spectrum communication system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Siu M. Lee whose telephone number is (571) 270-1083. The examiner can normally be reached on Mon-Fri, 7:30-4:00 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Siu M Lee
Examiner
Art Unit 2611
11/21/2007

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